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cm^2, 10^{-6} cm^2, 10^{-7} cm^2, 10^{-8} cm^2, or 10^{-10} cm^2. In a preferred embodiment, the regions 12 and 16 are between about 10x10 μm and 500x500 μm.

In some embodiments a single substrate supports more than about 10 different monomer sequences and preferably more than about 100 different monomer sequences, although in some embodiments more than about 10^3, 10^4, 10^5, 10^6, 10^7, or 10^8 different sequences are provided on a substrate. Of course, within a region of the substrate in which a monomer sequence is synthesized, it is preferred that the monomer sequence be substantially pure. In some embodiments, regions of the substrate contain polymer sequences which are at least about 1%, 5%, 10%, 15%, 20%, 25%, 30%, 35%, 40%, 45%, 50%, 60%, 70%, 80%, 90%, 95%, 96%, 97%, 98%, or 99% pure.--

IN THE CLAIMS:

Please cancel claims 1-56

Please add the following new claims.

57.   A computer readable medium comprising computer executable instructions for performing a method for controlling an array scanner comprising:

scanning an area of a substrate having a plurality of polymers, wherein each of the polymers is on a known location that is smaller than 250000 $microns^2$;

receiving pixel data from the scanner; and

outputting the pixel data to an image data file.

58.   The computer readable medium of Claim 57 wherein the method further comprises issuing commands to move a scan stage.

59.   The computer readable medium of Claim 57 wherein the method further comprises displaying the image data.

60.   The computer readable medium of Claim 57 wherein the polymers are oligonucleotides and the substrate is hybridized with a sample.

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61.   The computer readable medium of Claim 60 wherein the polymers are peptides.

62.   The computer readable medium of Claim 57 wherein the substrate has at least 400 polymers per cm^2.

63.   The computer readable medium of Claim 57 wherein the substrate has at least 1000 polymers per cm^2.

64.   The computer readable medium of Claim 57 wherein the substrate has at least 10000 polymers per cm^2.

65.   A computer software product comprising:

computer program code that scans an area of a substrate having a plurality of polymers, wherein each of the polymers is on a known location that is smaller than 250000 $microns^2$;

computer program code that receives pixel data from the scanner;

computer program code that outputs the pixel data to an image data file; and

a computer readable medium for storing the codes.

66.   The computer software product of Claim 65 further comprising computer program code that issues commands to move a scan stage.

67.   The computer software product of Claim 66 further comprising computer program code that displays the image data.

68.   The computer software product of Claim 65 wherein the polymers are oligonucleotides and the substrate is hybridized with a sample.

69.   The computer software product of Claim 65 wherein the polymers are peptides.

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70.   The computer software product of Claim 65 wherein the substrate has at least 400 polymers per cm^2.

71.   The computer software product of Claim 65 wherein the substrate has at least 1000 polymers per cm^2.

72.   The computer software product of Claim 65 wherein the substrate has at least 10000 polymers per cm^2.

73.   A system for controlling a polymer scanner comprising:

a processor; and a memory being coupled to the processor, the memory storing a plurality of machine instructions that cause the processor to perform a plurality of logical steps when implemented by the processor, the logical steps comprising:

scanning an area of a substrate having a plurality of polymers, wherein each of the polymers is on a location that is smaller than 250000 $microns^2$;

receiving pixel data from the scanner; and

outputting the pixel data to an image data file.

74.   The system of Claim 73 wherein the logic step further comprises issuing commands to move a scan stage.

75.   The system of Claim 74 wherein the logic step further comprises displaying the image data.

76.   The system of Claim 75 wherein the polymers are oligonucleotides and the substrate is hybridized with a sample.

77.   The system of Claim 76 wherein the polymers are peptides.

78.   A computer readable medium comprising computer executable instructions for performing a method comprising:

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scanning a polymer array to obtain a plurality intensity data, wherein the polymer array has a plurality of polymer probes, wherein each of the polymer probes occupies less than 250000 microns^2, and wherein the array has been contacted with a sample that may contain a target; and determining the positions of probe and target interaction based upon the intensity data.

79.   The computer readable medium of Claim 78 wherein the polymer probes are nucleic acids.

80.   The computer readable medium of Claim 78 wherein the polymer probes are oligonucleotides.

81.   The computer readable medium of Claim 78 wherein the intensity data reflects the hybridization of the oligonucleotide probes and the target.

82.   The computer readable medium of Claim 25 wherein intensity data are florescence data.

83.   The computer readable medium of Claim 22 wherein the substrate has at least 400 polymer probes per cm^2.

84.   The computer readable medium of Claim 22 wherein the substrate has at least 1000 polymer probes per cm^2.

85.   The computer readable medium of Claim 22 wherein the substrate has at least 10000 polymer probes per cm^2.

86.   A computer software product comprising:
Computer program code that scans a polymer array to obtain a plurality intensity data, wherein the polymer array has a plurality of polymer probes, wherein each of the polymer probes occupies less than 250000 microns^2, and wherein the array has been contacted with a sample that may contain a target;
determines the positions of probe and target interaction based upon the intensity data; and
a computer readable medium for storing the codes.

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87.   The computer software product of Claim 86 wherein the polymer probes are nucleic acids.

88.   The computer software product of Claim 86 wherein the polymer probes are oligonucleotides.

89.   The computer software product of Claim 86 wherein the intensity data reflects the hybridization of the oligonucleotide probes and the target.

90.   The computer software product of Claim 86 wherein intensity data are florescence data.

91.   The computer software product of Claim 86 wherein the substrate has at least 400 polymer probes per cm^2.

92.   The computer software product of Claim 86 wherein the substrate has at least 1000 polymer probes per cm^2.

93.   The computer software product of Claim 86 wherein the substrate has at least 10000 polymer probes per cm^2.

94.   A system for controlling a polymer scanner comprising:

a processor; and a memory being coupled to the processor, the memory storing a plurality of machine instructions that cause the processor to perform a plurality of logical steps when implemented by the processor, the logical steps comprising:
scanning a polymer array to obtain a plurality intensity data, wherein the polymer array has a plurality of polymer probes, wherein each of the polymer probes occupies less than 250000 $microns^2$, and wherein the array has been contacted with a sample that may contain a target; and determining the positions of probe and target interaction based upon the intensity data.

95.   The system of Claim 94 wherein the polymer probes are nucleic acids.

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96.   The system of Claim 95 wherein the polymer probes are oligonucleotides.

97.   The system of Claim 96 wherein the intensity data reflects the hybridization of the oligonucleotide probes and the target.

98.   The system of Claim 97 wherein intensity data are florescence data.

99.   The system of Claim 94 wherein the substrate has at least 400 polymer probes per cm^2.

100.   The system of Claim 94 wherein the substrate has at least 1000 polymer probes per cm^2.

101.   The system of Claim 94 wherein the substrate has at least 10000 polymer probes per cm^2.

102.   A system for scanning a polymer array comprising:

a scanning optical device;

a polymer array holder for holding the polymer array

a processor; and a memory being coupled to the processor, the memory storing a plurality of machine instructions that cause the processor to perform a plurality of logical steps when implemented by the processor, the logical step comprising moving the polymer array holder.

103.   The system of Claim 102 wherein the polymer array is a nucleic acid probe array.

104.   The system of Claim 103 wherein the polymer array is a peptide array.

105.   The system of Claim 104 wherein the polymer array has at least 400 polymers per cm^2.

106.   The system of Claim 105 wherein the polymer array has at least 1000 polymers per cm^2.

107.   The system of Claim 106 wherein the polymer array has at least 10000 polymers per cm^2.

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108.   A computer readable medium comprising executable instructions for acquiring data from a polymer array, comprising:

scanning a substrate having a plurality of different polymers at known locations, at least one known location having an area smaller than 250,000 microns^2; and

acquiring data which indicate binding between the polymer on the substrate and a target polymer.

109.   The computer readable medium of Claim 108 wherein the target polymer is a polypeptide.

110.   The computer readable medium of Claim 109 wherein the solid substrate has at least 400 probe polymers per cm^2.

111.   The computer readable medium of Claim 110 wherein the solid substrate has at least 1000 probe polymers per cm^2.

112.   The computer readable medium of Claim 111 wherein the solid substrate has at least 10,000 probe polymers per cm^2.

113.   The computer readable medium of Claim 108 wherein the target polymer is a nucleic acid.

114.   The computer readable medium of Claim 113 wherein the solid substrate has at least 400 probe polymers per cm^2.

115.   The computer readable medium of Claim 114 wherein the solid substrate has at least 1000 probe polymers per cm^2.

116.   The computer readable medium of Claim 115 wherein the solid substrate has at least 10,000 probe polymers per cm^2.

117.   The computer readable medium of Claim 108 wherein the data are fluorescence intensities.

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118.   The computer readable medium of Claim 108 wherein the substrate is an impermeable substrate having at least 1000 polymers/cm^2.

119.   The computer readable medium of Claim 108 wherein each of the known locations is smaller than 10,000 or 2,500 microns^2.

120.   A computer software product comprising

computer program code that scans a substrate having a plurality of different polymers at known locations, at least one known location having an area smaller than 250,000 microns^2;

computer program code that acquires data which indicate binding between the polymer on the substrate and a target polymer; and

a computer readable medium for storing the codes.

121.   The computer software product of Claim 120 wherein the target polymer is a polypeptide.

122.   The computer software product of Claim 121 wherein the solid substrate has at least 400 probe polymers per cm^2.

123.   The computer software product of Claim 122 wherein the solid substrate has at least 1000 probe polymers per cm^2.

124.   The computer software product of Claim 123 wherein the solid substrate has at least 10,000 probe polymers per cm^2.

125.   The computer software product of Claim 120 wherein the target polymer is a nucleic acid.

126.   The computer software product of Claim 125 wherein the solid substrate has at least 400 probe polymers per cm^2.

127.   The computer software product of Claim 126 wherein the solid substrate has at least 1000 probe polymers per cm^2.

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128.   The computer software product of Claim 127 wherein the solid substrate has at least 10,000 probe polymers per cm^2.

129.   The computer software product of Claim 120 wherein the data are fluorescence intensities.

130.   The computer software product of Claim 120 wherein the substrate is an impermeable substrate having at least 1000 polymers/cm^2.

131.   The computer software product of Claim 120 wherein each of the known locations is smaller than 10,000 or 2,500 microns^2.

132.   A computer readable medium comprising executable instructions for acquiring data from a polymer array, comprising:

 scanning a substrate having a plurality of different polymers at known locations, at least one known location having an area smaller than 250,000 microns^2; and

 acquiring data which indicate binding between the polymer on the substrate and a target polymer.

133.   The computer readable medium of Claim 108 wherein the target polymer is a polypeptide.

134.   The computer readable medium of Claim 109 wherein the solid substrate has at least 400 probe polymers per cm^2.

135.   The computer readable medium of Claim 110 wherein the solid substrate has at least 1000 probe polymers per cm^2.

136.   The computer readable medium of Claim 111 wherein the solid substrate has at least 10,000 probe polymers per cm^2.

137.   The computer readable medium of Claim 108 wherein the target polymer is a nucleic acid.

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138.   The computer readable medium of Claim 113 wherein the solid substrate has at least 400 probe polymers per cm^2.

139.   The computer readable medium of Claim 114 wherein the solid substrate has at least 1000 probe polymers per cm^2.

140.   The computer readable medium of Claim 115 wherein the solid substrate has at least 10,000 probe polymers per cm^2.

141.   The computer readable medium of Claim 108 wherein the data are fluorescence intensities.

142.   The computer readable medium of Claim 108 wherein the substrate is an impermeable substrate having at least 1000 polymers/cm^2.

143.   The computer readable medium of Claim 108 wherein each of the known locations is smaller than 10,000 or 2,500 $microns^2$.

144.   A system for controlling a polymer scanner comprising:

a processor; and a memory being coupled to the processor, the memory storing a plurality of machine instructions that cause the processor to perform a plurality of logical steps when implemented by the processor, the logical steps comprising:

scanning a substrate having a plurality of different polymers at known locations, at least one known location having an area smaller than 250,000 $microns^2$; and

acquiring data which indicate binding between the polymer on the substrate and a target polymer.

145.   The system of Claim 144 wherein the target polymer is a polypeptide.

146.   The system of Claim 145 wherein the solid substrate has at least 400 probe polymers per cm^2.

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147.   The system of Claim 146 wherein the solid substrate has at least 1000 probe polymers per cm^2.

148.   The system of Claim 147 wherein the solid substrate has at least 10,000 probe polymers per cm^2.

149.   The system of Claim 144 wherein the target polymer is a nucleic acid.

150.   The system of Claim 149 wherein the solid substrate has at least 400 probe polymers per cm^2.

151.   The system of Claim 150 wherein the solid substrate has at least 1000 probe polymers per cm^2.

152.   The system of Claim 151 wherein the solid substrate has at least 10,000 probe polymers per cm^2.

153.   The system of Claim 144 wherein the data are fluorescence intensities.

154.   The system of Claim 144 wherein the substrate is an impermeable substrate having at least 1000 polymers/cm^2.

155.   The system of Claim 144 wherein each of the known locations is smaller than 10,000 or 2,500 microns^2.

REMARKS

The inserted material into the specification comes from predecessor application 07/492,462, which is incorporated by reference into the present application.

The new claims are directed to computer products and methods for analyzing the binding pattern of an array. Such methods are described at e.g., pp. 53-57 of the specification.